**ARB Life Cycle Analysis Training Session**
**Introduction to LCA and CA-GREET Model**
**California Energy Commission, Sacramento, CA**

With the adoption of California policies regulating greenhouse gas (GHG) emissions (AB32 & Low-Carbon Fuel Standard), it is important to effectively quantify the GHG emissions associated with the production and consumption of vehicle fuels as the transportation sector is a major source of total GHG emissions. To quantify emissions from all of the processes associated with production and consumption, "life cycle analyses" (LCA) are conducted. This training session will introduce stakeholders to the concepts behind LCAs and introduce tools developed to support the California regulatory process.

The training will be a full-day session that will provide an overview of how LCAs are performed and utilized. In addition, the use of the CA-GREET model - the tool developed for AB1007 – will be described to illustrate how the relevant inputs are used in the model to provide an accurate assessment of the GHG footprint of a particular fuel.

The following topics will be covered in the one-day training session:

- What is Life Cycle Analysis applied to transportation fuels and what does it hope to accomplish
- LCA Overview
  - Visual and narrative presentation illustrating how the various steps in the fuel pathway (feedstock production/extraction, transport, refining/processing, consumption, etc.) combine to quantify the GHG and pollutant emissions for a fuel pathway
  - Visually display the productions steps associated with the specific fuel pathways (for gasoline + ethanol)
- Introduction to CA-GREET Model
  - Developmental history of the Argonne GREET model
  - Reasons for developing a California specific version of the GREET model
  - Specific details of the CA-GREET model
    - Fuel pathways evaluated
    - Primary inputs
    - Primary outputs
    - Key assumptions
    - United States vs. California inputs
    - Interpreting and using the outputs/results
- Overview of CA-GREET Deficiencies
  - Co-product credit
  - Land-use
  - Sustainability
  - Uncertainty
  - Others

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- Future Developments of CA-GREET Model
  - Describe the modifications that will be necessary to the CA-GREET model for use with the low carbon fuel standard
  - Potential for integration with the U.S. Environmental Protection Agency version of the GREET model if available
- CA-GREET Demonstration
  - Training session participants will be given a step-by-step tutorial on how to use the CA-GREET model to evaluate one or two specific fuels (gasoline, ethanol)

*Note: This last item may or may not be presented depending on feedback from potential attendees from the LCA working group.*

This training session, when complete, should provide participants with a basic understanding of how life cycle analyses are conducted, and for what purpose.

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